Lyme/Lyme-like Disease
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Lyme/Lyme-like* Disease

*Lyme-like Disease: Missouri patients who fulfill the strict CDC surveillance definitions for Lyme disease are reported as such, although *Borrelia burgdorferi* has not been isolated from any of Missouri's cases, as of yet. The Missouri erythema migrans rashes are indistinguishable from those in other areas of the United States, but are referred to as erythema migrans-like by the Division of Vector-Borne Infectious Diseases, National Center for Infectious Diseases, Centers for Disease Control and Prevention. The clinical syndrome appears similar to Lyme disease. In Missouri, it is called Lyme-like disease.[1, 2]

Overview [3, 4]

For a complete description of Lyme disease, refer to the following texts:

- Control of Communicable Diseases Manual (CCDM).
- Red Book, Report of the Committee on Infectious Diseases.

Case Definition [5]

Clinical description
A systemic, tickborne disease with protean manifestations, including dermatologic, rheumatologic, neurologic, and cardiac abnormalities. The best clinical marker for the disease is the initial skin lesion (i.e., erythema migrans [EM]) that occurs in 60%-80% of patients.

Laboratory criteria for diagnosis

- Isolation of *Borrelia burgdorferi* from a clinical specimen or
- Demonstration of diagnostic immunoglobulin M or immunoglobulin G antibodies to *B. burgdorferi* in serum or cerebrospinal fluid (CSF). A two-test approach using a sensitive enzyme immunoassay or immunofluorescence antibody followed by Western blot is recommended.

Case classification
Confirmed: a) a case with EM or b) a case with at least one late manifestation (as defined below) that is laboratory confirmed.

Comment
This surveillance case definition was developed for national reporting of Lyme disease; it is not intended to be used in clinical diagnosis.

Definition of terms used in the clinical description and case definition:

- *Erythema migrans.* For purposes of surveillance, EM is defined as a skin lesion that typically begins as a red macule or papule and expands over a period of days to weeks to form a large round lesion, often with partial central clearing. A single primary lesion must reach ≥5 cm in size. Secondary lesions also may occur. Annular erythematous lesions occurring within several hours of a tick bite represent hypersensitivity reactions and do not qualify as EM. For most patients, the expanding EM lesion is accompanied by other acute symptoms, particularly fatigue, fever, headache, mildly stiff neck, arthralgia, or myalgia. These symptoms are typically intermittent. The diagnosis of EM must be made by a physician. Laboratory confirmation is recommended for persons with no known exposure.
- *Late manifestations.* Late manifestations include any of the following when an alternate explanation is not found:
  1. *Musculoskeletal system.* Recurrent, brief attacks (weeks or months) of objective joint swelling in one or a few joints, sometimes followed by chronic arthritis in one or a few joints. Manifestations not considered as criteria for diagnosis include chronic progressive arthritis not preceded by brief attacks and chronic symmetrical polyarthritis. Additionally, arthralgia, myalgia, or fibromyalgia syndromes alone are not criteria for musculoskeletal involvement.
  2. *Nervous system.* Any of the following, alone or in combination: lymphocytic meningitis; cranial neuritis, particularly facial palsy (may be bilateral); radiculoneuropathy; or, rarely, encephalomyelitis. Encephalomyelitis must be confirmed by demonstration of antibody production against *B. burgdorferi in* the CSF, evidenced by a higher titer of antibody in CSF than in serum. Headache, fatigue, paresthesia, or mildly stiff neck alone are not criteria for neurologic involvement.
  3. *Cardiovascular system.* Acute onset of high-grade (2^{nd}-degree or 3^{rd}-degree) atrioventricular conduction defects that resolve in days to weeks and are sometimes associated with myocarditis. Palpitations, bradycardia, bundle branch block, or myocarditis alone are not criteria for cardiovascular involvement.
- *Exposure.* Exposure is defined as having been (≤30 days before onset of EM) in wooded, brushy, or grassy areas (i.e., potential tick habitats) in a county in which Lyme disease is endemic. A history of tick bite is not required.
- *Disease endemic to county.* A county in which Lyme disease is endemic is one in which at least two confirmed cases have been previously acquired or in which established populations of a known tick vector are infected with *B. burgdorferi.*

Information Needed for Investigation

Verify the diagnosis. Was there an EM rash of ≥5cm? Determine what laboratory tests were conducted and the results.

Establish the extent of illness. Are other persons (e.g., family, friends) who might have shared the same exposure environment showing any signs of disease?

Case/Contact Follow Up And Control Measures

This disease is not transmitted person-to-person, so no contact follow up is required.

Control Measures

See the Control of Communicable Diseases Manual, Lyme Disease, "Methods of control."

See the Red Book, Lyme Disease, "Control Measures."

- Antibiotic prophylaxis after a tick bite (in the absence of symptoms) is usually not recommended. For this to be cost effective, the probability of *B. burgdorferi* infection would have to be abnormally high, which it is not in Missouri.
- **As of February 25, 2002 the manufacturer announced that the LYMErix™ Lyme disease vaccine would no longer be commercially available.** The efficacy of this vaccine against the Lyme-like disease seen in Missouri was never substantiated because the agent has not been positively identified and the vaccine had not been tested for efficacy against this disease.

Laboratory Procedures

The Missouri State Public Health Laboratory (SPHL) does not perform any testing for *B. burgdorferi*. However, the SPHL can arrange for testing of clinical specimens at various other laboratories. Information on laboratory procedures can be obtained from the Regional Communicable Disease Coordinator or from staff at the SPHL. The SPHL telephone number is 573-751-0633 and the web site is: http://www.dhss.state.mo.us/Lab/index.htm. (4 June 2003)

- **Culture:** *B. burgdorferi* organisms have been readily isolated from the margins of erythema migrans lesions; however, the organisms have been isolated infrequently from blood, joints, and cerebrospinal fluid. [6] Contact the SPHL for assistance in locating a laboratory that will isolate *B. burgdorferi*.

- **Serology:** The SPHL can submit serological specimens for testing to the Centers for Disease Control and Prevention, Fort Collins, Colorado. This laboratory offers an IgM

antibody test on acute serum and an IgG antibody titer on paired serum. Positive or equivocal tests will be followed with a Western blot.

- CDC will perform IgM antibody testing on acute serum if the serum is collected within four weeks of onset. For best results the acute serum should be collected three to four weeks after onset of symptoms. Test results on specimens collected before three weeks may give a false negative result. A positive IgM test is indicative of a recent infection with *B. burgdorferi.*
- CDC will perform IgG antibody testing on paired serum. For best results the acute serum should be collected three weeks after onset and the convalescent serum should be collected five weeks after the acute specimen was collected. A significant rise in IgG antibody titer between the acute and the convalescent sera is indicative of a recent infection with *B. burgdorferi.*
- All acute serum samples collected within the appropriate time frame will be sent to CDC for IgM testing and a request will be made at this time by the SPHL, to the submitter, for a convalescent specimen. Results of the IgM test will be sent to the submitter upon completion of testing. When the convalescent specimen arrives it will be sent to CDC for IgG testing. CDC will test both the acute and the convalescent specimens for IgG antibody. Upon completion of the IgG testing results will be sent to the submitter.
- Submission of Blood Specimens: The following forms must accompany specimens sent to the SPHL:
  1. CDC Lab Form 50.34; in this Section or at: http://www.cdc.gov/ncidod/dvbid/misc/CDC50_34.pdf (4 June 2003)
  2. Syphilis test results by the RPR or MHA-TP test **or**
  3. A completed syphilis test request form, if the specimen is to be tested by the SPHL (this is to rule out syphilis, which is a spirochete, as is *B. burgdorferi*).
  4. A completed Lyme Disease Case Report (MO580-1807)

Reporting Requirements

Lyme disease is a Category II disease and shall be reported to the local health authority or to the Missouri Department of Health and Senior Services (DHSS) within three days of first knowledge or suspicion by telephone, facsimile or other rapid communication.

1. For all cases, complete a "Disease Case Report" (CD-1).
2. For all cases, complete a "Lyme Disease Case Report" (MO580-1807).
3. Entry of the completed CD-1 into MOHSIS negates the need for the paper CD-1 to be forwarded to the Regional Health Office.
4. Send the completed secondary investigation form to the Regional Health Office.

5. All outbreaks or "suspected" outbreaks must be reported as soon as possible (by phone, fax, or e-mail) to the Regional Communicable Disease Coordinator. This can be accomplished by completing the Missouri Outbreak Surveillance Report (CD-51).
6. Within 90 days of the conclusion of an outbreak, submit the final outbreak report to the Regional Communicable Disease Coordinator.

References

1. Lyme and/or Lyme-like Disease in Missouri. Masters, E.J., Donnell, H.D. Missouri Medicine. Vol 92, No. 7; July, 1995: 346-353.
2. Epidemiologic and Diagnostic Studies of Patients with Suspected Early Lyme Disease, Missouri, 1990-1993; Campbell, G.L., Paul, W.S., Schriefer, M.E., Craven, R.B., Robbins, K.E., Dennis, D.T. Journal of Infectious Diseases, 1995; 175:470-480.
3. Chin, James, ed. "Lyme Disease (Lyme borreliosis, Tickborne meningopolyneuritis)." Control of Communicable Diseases Manual. 17th ed. Washington, DC: American Public Health Association, 2000: 302-306.
4. American Academy of Pediatrics. "Lyme Disease (*Borrelia burgdorferi*)." In: Pickering, LK. ed. 2000 Red Book: Report of the Committee on Infectious Diseases. 25th ed. Elk Grove Village, IL. 2000: 374-379.
5. Centers for Disease Control and Prevention. Case Definitions for Infectious Conditions Under Public Health Surveillance. MMWR 1997: 46 (No. RR-10). "Lyme Disease (*Borrelia burgdorferi*)," 1996, http://www.cdc.gov/epo/dphsi/casedef/lyme_disease_current.htm (4 June 2003)
6. Moore, Kristine A, Hedberg, Craig, Osterholm, Michael T. "Lyme Disease." Bacterial Infections of Humans Epidemiology and Control. 3rd ed. Eds. Alfred S. Evans and Philip S. Brachman. New York: Plenum, 1998: 439-441.

Other Sources of Information

1. Steere, Allen C. "Borrelia Burgdorferi (Lyme Disease, Lyme Borreliosis)." Principles and Practice of Infectious Diseases. 5th ed. Eds. Gerald L. Mandell, John E. Bennett, and Raphael Dolin. New York: Churchill Livingstone, 2000:2504-2514.
2. Laboratory Serodiagnosis of Lyme Borreliosis: Callister, S.M.; Schell, R.F.; Journal of Spirochetal and Tick-borne Diseases; Volume 5, Spring/Summer 1998: 4-10.
3. The Merck Veterinary Manual. 8th Ed. Ed. Susan E. Aiello. Whitehouse Station, NJ: Merck & Co., Inc., 1998: 436, 2162. http://www.merckvetmanual.com/mvm/index.jsp (search "Lyme"). (4 June 2003)

Web Sites

1. Centers for Disease Control and Prevention - Protect Yourself from Ticks and Lyme Disease, http://www.cdc.gov/nasd/docs/d000901-d001000/d000961/d000961.html (4 June 2003)
2. Centers for Disease Control and Prevention - Lyme Disease Home page, http://www.cdc.gov/ncidod/dvbid/lyme/index.htm (4 June 2003)
3. Lyme Disease Foundation, Inc., http://www.lyme.org (4 June 2003)
4. American Lyme Disease Foundation, Inc., http://www.aldf.com (4 June 2003)

Lyme/Lyme-like Disease

FACT SHEET

What is Lyme disease?

Lyme disease is an infectious illness that can be transmitted by the bite of a tick. It is caused by a type of bacteria called *Borrelia burgdorferi*.

What is Lyme-like disease?

Missouri patients who fulfill the strict Centers for Disease Control and Prevention (CDC) surveillance definition for Lyme disease are reported as such, although *B. burgdorferi* has not been isolated from any of Missouri's cases, as of yet. The Missouri erythema migrans rashes are indistinguishable from those in other areas of the United States, but are referred to as erythema migrans-like by CDC. The clinical syndrome appears similar to Lyme disease. In Missouri, it is called Lyme-like disease.

What are the symptoms of Lyme disease?

The symptoms of Lyme disease vary a great deal from one case to the next. In general, the early signs appear 3 to 32 days after a tick bite. The early symptoms of the disease can include fever, fatigue, headaches, aching joints, nausea, and a characteristic skin rash called erythema migrans (EM). EM, which occurs in 60-80 percent of the cases of Lyme disease, is roughly circular in shape. EM is usually found at the site of the tick bite, although it can also be found on other parts of the body. In time, the rash gets larger and the center often becomes clear (not reddened).

When the early symptoms are present it is important to treat the disease, otherwise late symptoms and complications can develop.

The late symptoms of the disease can include: severe headaches, stiff neck, weakness and/or pain in the extremities, facial paralysis, cardiac problems and arthritis (very common in this stage of the disease).

The late symptoms may occur weeks to years after being infected.

How does a person get Lyme disease?

The disease is transmitted through the bite of a tick infected with *B.* burgdorferi. The tick must be actually attached to a person's skin to transmit the infection. In experimental animals, transmission of Lyme disease does not occur until the tick has been attached for 24 hours or more; this may also be true in humans. Only a small percentage of ticks carry Lyme disease. The tick commonly known as the "deer tick" can carry the disease. Some other kinds of ticks may also spread Lyme disease, but this is not known with certainty. Because the tick may be very small, many people may not be aware that they have been bitten.

Can Lyme disease be treated?

Yes, once Lyme disease is diagnosed a physician will prescribe an antibiotic. Prompt treatment can cure the infection and usually prevents later complications.

Is there a vaccine for Lyme disease?

As of February 25, 2002 the manufacturer announced that the LYMErix™ Lyme disease vaccine would no longer be commercially available. The efficacy of this vaccine against the Lyme-like disease seen in Missouri was never substantiated because the agent has not been positively identified in Missouri and the vaccine had not been tested for efficacy against this disease.

How should a tick be removed?

Ticks should be removed promptly and carefully by using tweezers and applying gentle, steady traction. Do not crush the tick's body when removing it and apply the tweezers as close to the skin as possible to avoid leaving tick mouthparts in the skin. Do not remove ticks with your bare hands. Protect your hands with gloves, cloth, or tissue and be sure to wash your hands after removing a tick. After removing the tick, disinfect the skin with soap and water or other available disinfectants.

How can Lyme disease be prevented?

1. Avoid tick-infested areas, especially during the warmer months.
2. Wear light colored clothing so ticks can be easily seen and removed. Wear a long sleeved shirt, hat, long pants, and tuck your pant legs into your socks.
3. Walk in the center of trails to avoid overhanging grass and brush.
4. Check your body every few hours for ticks when you spend a lot of time outdoors in tick-infested areas. Ticks are most often found on the thigh, arms, underarms, legs or where tight fitting clothing has been.
5. Use insect repellents containing DEET on your skin or permethrin on your clothing. Be sure to follow the directions on the container and wash off repellents when going indoors. Carefully read the manufacturer's label on repellents before using on children.
6. Remove attached ticks immediately.

Missouri Department of Health and Senior Services
Section for Communicable Disease Prevention
Phone: (866) 628-9891 or (573) 751-6113

LABORATORY EXAMINATION(S) REQUESTED:

☐ **AN**timicrobial Susceptibility ☐ **IS**olation
☐ **HI**stology ☐ **SE**rology (Specific Test) _____
☐ **ID**entification ☐ **OT**her (Specify) _____

CATEGORY OF AGENT SUSPECTED:

☐ **BA**cterial ☐ **RI**ckettsial
☐ **VI**ral ☐ **PA**rasitic
☐ **FU**ngal ☐ **OT**her (Specify) _____

SPECIFIC AGENT SUSPECTED:	OTHER ORGANISM(S) FOUND:	ISOLATION ATTEMPTED?	NO. OF TIMES ISOLATED:	NO. OF TIMES PASSED:	SPECIMEN SUBMITTED IS:
		☐ YES ☐ NO			☐ Original Material ☐ Mixed Isolate ☐ Pure Isolate

DATE SPECIMEN TAKEN:

__/__/__ MO DA YR

ORIGIN:

☐ **HU**man ☐ **FO**od ☐ **SO**il ☐ **AN**imal (Specify) _____ ☐ **OT**her (Specify) _____

SOURCE OF SPECIMEN:

☐ **BL**ood ☐ **CS**F
☐ **GA**stric ☐ **HA**ir
☐ **SE**rum ☐ **SK**in
☐ **SP**utum ☐ **ST**ool
☐ **UR**ine ☐ **TH**roat
☐ **WO**und (Site) _____
☐ **EX**udate (Site) _____
☐ **TI**ssue (Specify) _____
☐ **OT**her (Specify) _____

SUBMITTED ON:

☐ **ME**dium _____
☐ **AN**imal _____
☐ **TI**ssue Culture (Type) _____
☐ **EG**g ☐ **OT**her (Specify) _____

SERUM INFORMATION:

	MO DA YR		MO DA YR
☐ **AC**ute	__ __/__ __/__ __ __ __	☐ **S3**	__ __/__ __/__ __ __ __
☐ **CO**nvalescent	__ __/__ __/__ __ __ __	☐ **S4**	__ __/__ __/__ __ __ __
		☐ **S5**	__ __/__ __/__ __ __ __

IMMUNIZATIONS:

	MO YR
(1.) _____	__ __/__ __ __ __
(2.) _____	__ __/__ __ __ __
(3.) _____	__ __/__ __ __ __
(4.) _____	__ __/__ __ __ __

TREATMENT: DRUGS USED ☐ None

	DATE BEGUN MO DA YR	DATE COMPLETED MO DA YR
(1.) _____	__ __/__ __/__ __ __ __	__ __/__ __/__ __ __ __
(2.) _____	__ __/__ __/__ __ __ __	__ __/__ __/__ __ __ __
(3.) _____	__ __/__ __/__ __ __ __	__ __/__ __/__ __ __ __

EPIDEMIOLOGICAL DATA:

☐ **SI**ngle Case ☐ **SP**oradic ☐ **CO**ntact ☐ **EP**idemic ☐ **CA**rrier

Family Illness _____

Community Illness _____

Travel and Residence (Location)

☐ **Foreign** _____

☐ **USA** _____

Animal Contacts (Species) _____

Anthropod Contacts: ☐ None ☐ Exposuer Only ☐ Bite

Type of Anthropod: _____

Suspected Source of Infection: _____

SIGNS AND SYMPTOMS:

☐ **FE**ver
Maximum Temperature: _____
Duration: _____ Days
☐ **CH**ills

SKIN:

☐ **MA**culopapular
☐ **HE**morrhagic
☐ **VE**sicular
☐ **E**rythema **N**odosum
☐ **E**rythema **M**arginatum
☐ **OT**her

RESPIRATORY:

☐ **RH**initis
☐ **PU**lmonary
☐ **PH**aryngitis
☐ **CA**lcifications
☐ **O**titis **M**edia
☐ **PN**eumonia (type)
☐ **OT**her

CARDIOVASCULAR:

☐ **MY**ocarditis
☐ **PE**ricarditis
☐ **EN**docarditis
☐ **OT**her

GASTROINTESTINAL:

☐ **DI**arrhea
☐ **BL**ood
☐ **MU**cous
☐ **CO**nstipation
☐ **AB**normal Pain
☐ **VO**miting
☐ **OT**her

CENTRAL NERVOUS SYSTEM:

☐ **HE**adache
☐ **ME**ningismus
☐ **MI**crocephalus
☐ **HY**drocephalus
☐ **SE**izures
☐ **CE**rebral Calcification
☐ **CH**orea
☐ **PA**ralysis
☐ **OT**her

MISCELLANEOUS:

☐ **JA**undice
☐ **MY**algia
☐ **PL**eurodynia
☐ **CO**njunctivitis
☐ **CH**orioretinitis
☐ **SP**lenomegaly
☐ **HE**patomegaly
☐ **LI**ver Abscess/cyst
☐ **LY**mphadenopathy
☐ **MU**cous Membrane Lesions
☐ **OT**her

STATE OF ILLNESS:

☐ **SY**mptomatic
☐ **AS**ymptomatic
☐ **SU**bacute
☐ **CH**ronic
☐ **DI**sseminated
☐ **LO**calized
☐ **EX**traintestinal
☐ **OT**her

PREVIOUS LABORATORY RESULTS/OTHER CLINICAL INFORMATION: (Information supplied should be related to this case and/or specimen(s) and relative to the test(s) requested.

CDC NUMBER

UNIT	FY	NUMBER	SUF.

Justification must be completed by State health department laboratory before specimen can be accepted by CDC. Please check the first applicable statement and when appropriate complete the statement with the ⋆.

1. Disease suspected to be of public health importance. Specimen is:
   (a) ❑ from an outbreak. (b) ❑ from uncommon or exotic disease.
   (c) ❑ an isolate that cannot be identified, is atypical, shows multiple antibiotic resistance, or from a normally sterile site(s) (d) ❑ from a disease for which reliable diagnostic reagents or expertise are unavailable in State.
2. ❑ Ongoing collaborative CDC/State project.
3. ❑ Confirmation of results requested for quality assurance.

⋆Prior arrangement for testing has been made.
Please bring to the attention of:

(Name): _____

Completed by:

_____

Date: __ __/__ __/__ __ __ __

Name, Address and Phone Number of Physician or Organization:

STATE HEALTH DEPARTMENT LABORATORY ADDRESS:

STATE HEALTH DEPT. NO.: _____

DATE SENT TO CDC: (MM/DD/YYYY) __ __/__ __/__ __ __ __

PATIENT IDENTIFICATION: (Hospital No.) _____

NAME: (LAST, FIRST, MI) _____

BIRTHDATE: (MM/DD/YYYY) __ __/__ __/__ __ __ __

SEX: ❑ MALE ❑ FEMALE

CLINICAL DIAGNOSIS: _____

ASSOCIATED ILLNESS: _____

DATE OF ONSET: (MM/DD/YYYY) __ __/__ __/__ __ __ __

FATAL? ❑ YES ❑ NO

(FOR CDC USE ONLY)		CDC NUMBER		DATE RECEIVED
UNIT	FY	NUMBER	SUF	MO DA YR
				__ __/__ __/__ __ __ __

REVERSE SIDE OF THIS FORM MUST BE COMPLETED

THIS FORM MUST BE EITHER PRINTED OR TYPED
PLEASE PREPARE A SEPARATE FORM FOR EACH SPECIMEN

D.A.S.H.

DATE REPORTED
MO DA YR
___ ___/___ ___/___ ___ ___ ___

0	3

Comments:

D	6	5

DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Centers for Disease Control
Center for Infectious Diseases
Atlanta, Georgia 30333

CDC
Centers for Disease Control and Prevention

MISSOURI DEPARTMENT OF HEALTH
BUREAU OF COMMUNICABLE DISEASE CONTROL

LYME DISEASE CASE REPORT

CASE ID

NAME (LAST, FIRST, MIDDLE INITIAL)

TELEPHONE NUMBER

ADDRESS (STREET, CITY, STATE, ZIP CODE)

COUNTY

PARENT'S NAME IF MINOR

DATE OF **BIRTH**: Mo Day Year ☐☐ ☐☐ ☐☐

Age (yrs) _____

Sex ☐ M ☐ F

Race ☐ Amer. Indian/Eskimo ☐ Asian/Pacific Isl. ☐ Black ☐ White ☐ Unknown

Ethnicity ☐ Hispanic ☐ Non Hispanic ☐ Unknown

Date of **Onset** of first symptoms? Mo Day Year ☐☐ ☐☐ ☐☐

Date of **Diagnosis**? Mo. Day Year ☐☐ ☐☐ ☐☐

Date of **Report** to health agency? Mo. Day Year ☐☐ ☐☐ ☐☐

SYMPTOMS AND SIGNS OF CURRENT EPISODE (PLEASE MARK EACH QUESTION)

INITIAL INFECTION:

Erythema migrans (EM) present [N] [Y] [?]

Physician diagnosed? [N] [Y] [?]

EM **first** seen? Mo. Day Year ☐☐ ☐☐ ☐☐

EM **last** seen? Mo. Day Year ☐☐ ☐☐ ☐☐

What was its largest **diameter**? _____ cm (Please estimate in centimeters — 1 inch = 2.54 centimeters.)

Describe **EM/rash**: ☐ Central clearing ☐ **Redness** ☐ **Papules** ☐ **Plaques** ☐ **Nodules**

Early symptoms? (Please answer whether or not EM rash was present.)

☐ **Fever** ☐ **Fatigue** ☐ **Headache** ☐ **Stiff neck** ☐ **Joint pain** ☐ **Muscle pain**

☐ **Other early** symptoms _____

RHEUMATOLOGIC:

Arthritis characterized by brief attacks of joint **swelling**? [N] [Y] [?]

Swelling **observed** by physician? [N] [Y] [?]

Location of swollen joint(s): _____

Swelling last more than six months per **episode**? [N] [Y] [?] **Length** of episode? _____

NEUROLOGIC:

Did patient have **Bell's palsy** or cranial neuritis observed by physician? [N] [Y] [?]

Describe cranial **neuritis**: _____

Did patient have **radiculoneuropathy**? [N] [Y] [?]

Name **limb(s)** affected: _____

Did patient have **lymphocytic** meningitis? [N] [Y] [?]

Did patient have **encephalitis**/encephalomyelitis? [N] [Y] [?]

CARDIOLOGIC:

2nd or 3rd degree atrioventricular block? [N] [Y] [?]

EKG done? [N] [Y] [?] **Palpitations**? [N] [Y] [?]

Cardiac **manifestations**: _____

CLINICAL:

Other late clinical symptoms: _____

Was patient assessed for:

Multiple sclerosis [N] [Y] [?] **Rheumatoid factor** [N] [Y] [?] **Syphillis** [N] [Y] [?]

Evaluation _____

OTHER HISTORY

Was patient **hospitalized**? [N] [Y] [?]

Name of **antibiotic(s)** used this episode? _____ _____ No. of days used: _____

Was patient **pregnant**? [N] [Y] [?]

LABORATORY DATA

CSF tested for antibodies to *B burgdorferi*? [N] [Y] [?]

Blood tested for antibodies to *B burgdorferi*? [N] [Y] [?]

Antibody to *B burgdorferi* higher in CSF than **Serum**? [N] [Y] [?]

	Serum Date (Mo. Day Year)	Test Results	Serum Test Method	Normal Values Less than:
Serology 1	☐☐ ☐☐ ☐☐	☐☐☐☐☐☐	☐ ELISA ☐ IFA ☐ Western Blot ☐ Other _____	☐☐☐☐☐
Serology 2	☐☐ ☐☐ ☐☐	☐☐☐☐☐☐	☐ ELISA ☐ IFA ☐ Western Blot ☐ Other _____	☐☐☐☐☐

Date of Culture (Mo. Day Year) ☐☐ ☐☐ ☐☐ **Culture Results:** ☐ Positive ☐ Negative ☐ Unknown

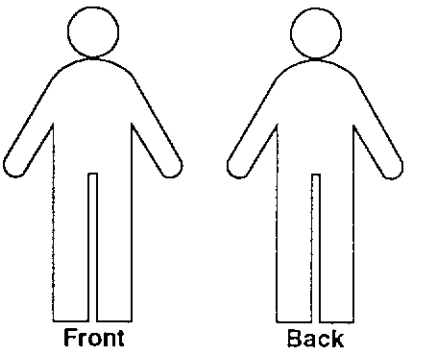
CULTURE SITE	OTHER TESTS (SPECIFY)

RESULTS

EXPOSURE HISTORY

Was there a **tick bite**? [N] [Y] [?] **Date of tick bite:** (Mo. Day Year) ☐☐ ☐☐ ☐☐

Indicate with "X" body location of tick bite



Site where tick bite (or other exposure, if not tick bite) occurred:

County _____ **State** _____

Type of tick:

- ☐ Lone Star Tick *(Amblyomma americanum)*
- ☐ Dog Tick *(Dermacentor variabilis)*
- ☐ Black-legged Tick *(Ixodes scapularis)*
- ☐ Unknown
- ☐ Other _____

Activity at time of tick bite or other exposure? _____

PHYSICIAN'S NAME	PERSON COMPLETING FORM (IF DIFFERENT FROM PHYSICIAN)
ADDRESS	ADDRESS
TELEPHONE NUMBER ( )	TELEPHONE NUMBER ( )

FOR CENTRAL OFFICE STAFF USE ONLY

Case Status: ☐ Meets Case Definition ☐ Does Not Meet Case Definition ☐ Pending